FOURTEENTH ANNUAL REPORT

FOR THE PERIOD APRIL 1, 1981 TO MARCH 31, 1982

Activities of the Fraser River Joint Advisory Board

Canada – British Columbia Agreement, May 24, 1968

Flood Control in the Fraser Valley

MARCH 31, 1982

FOURTEENTH ANNUAL REPORT

For the Period April 1, 1981 to March 31, 1982

ACTIVITIES OF THE

FRASER RIVER JOINT ADVISORY BOARD

Canada-British Columbia Agreement, May 24, 1968

Flood Control in the Fraser Valley

March 31, 1982

FOURTEENTH ANNUAL REPORT

FOR THE PERIOD APRIL 1, 1981 to MARCH 31, 1982

1. GENERAL

The Fraser River Joint Advisory Board herewith submits its annual report for the year ending March 31, 1982, in accordance with the requirements of paragraph 18(a) of the May 24, 1968 Agreement.

2. MEETINGS

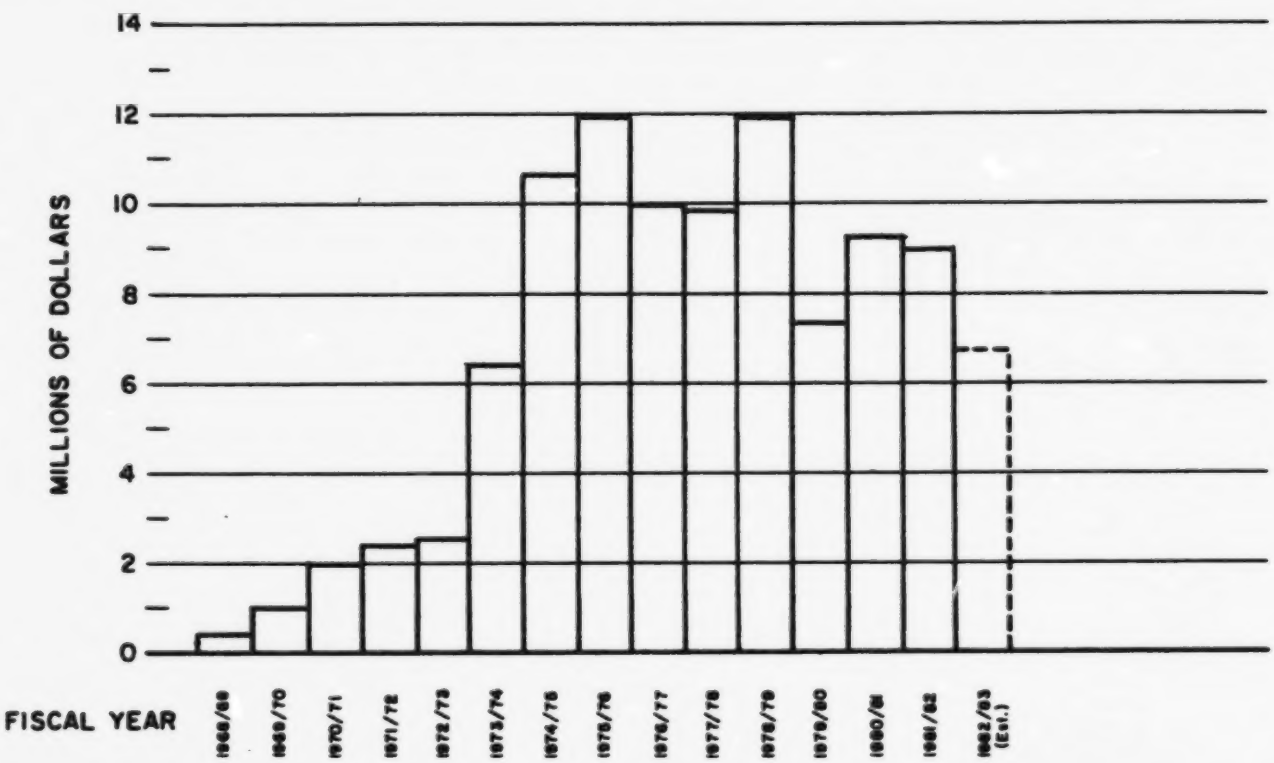
The 30th Board meeting was held on October 14, 1981.

3. BUDGETING

During the year a total of $9,072,215 was spent under the Program, of which $8,398,466 was for construction (including site supervision), and $673,749 for engineering design and administration. This brings the total expenditures under the Program to date to $91,985,744.

Funds budgeted by the Province for the fiscal year ending March 31, 1983 total $6,700,000, of which $6,300,000 is budgeted for construction and $400,000 for engineering design and administration.

Annual Program expenditures are illustrated in the following bar chart:



FRASER RIVER FLOOD CONTROL PROGRAM EXPENDITURES

4. APPLICATIONS

As of March 31, 1982, applications for inclusion in the Program have been received for the following projects:

Project	Date of Application
Kent	March 3, 1969
Pitt Meadows	March 3, 1969
Richmond	March 3, 1969
Surrey: Dams	May 6, 1969
Sea Dykes	
Upstream Dykes	
South Westminster Area	
Matsqui	May 15, 1969
Abbotsford (Sumas)	May 15, 1969
Chilliwack	August 1, 1969
Delta	August 1, 1969
Mission	August 4, 1969
Maple Ridge	October 1, 1969
Harrison Hot Springs	February 27, 1970
Vedder River	April 10, 1970
City of Port Coquitlam and District of Coquitlam	April 30, 1970
Colony Farm	August 24, 1970
Burnaby	November 26, 1970
New Westminster	December 18, 1970
Chilliwack Indian Reserves Nos. 3 and 4	March 8, 1971
Seabird Island	October 8, 1971
Langley	March 2, 1972
Dewdney Area Improvement District	April 30, 1973
Kamloops	October 28, 1973
East and West Nicomen Dyking District	February 15, 1974
Glen Valley Dyking District	February 20, 1974
Nicomen Island Improvement District	September 13, 1974

5. DESIGN

Design work by consultants during the period continued for the Richmond, Delta and Abbotsford projects. The British Columbia Ministry of Environment, Water Management Branch, continued design for the Vedder River drainage discharge structures. Detailed progress of design for individual projects is provided in Table I.

Outline reports for some seventeen projects not currently scheduled under the Program were prepared by the Provincial Water Management Branch while benefit studies for these projects were carried out by the Inland Waters Directorate of Environment Canada.

6. PROJECT APPROVAL

Projects that have been approved for construction by the Board and Ministers as of the reporting date are listed under "Approved Funds" in the Summary of Expenditures provided in Table II.

7. CONSTRUCTION

The following comments are given for projects on which significant activity occurred during the year. The locations of these works are shown on the plan attached at the end of this report.

A. Township of Richmond - This project includes the reconstruction of 30 miles of dyke on Lulu Island, 4.2 miles of bank protection and modification or replacement of drainage discharge facilities at 26 locations. During the year a contract was awarded in the amount of $2,738,869 for the reconstruction of four drainage discharge structures. Reconstruction of the dykes is 99% complete with the overall project being 97% complete. Expenditures for construction during the year amounted to $909,701.

B. District of Delta - The project includes the rehabilitation of 27 miles of dyke, 8 miles of bank protection, 3 pumping stations and 12 floodboxes. During the year a contract for the final surfacing of River Road East, in the amount of $345,218.40, was awarded and completed. A further contract for the rehabilitation of the Mason floodbox was awarded in the amount of $79,420. Total expenditures for construction during the period amounted to $341,904. The Delta project is now virtually complete

4. B. continued:

except for the dyke reconstruction through the Tsawwassen Indian Reserve. The legal survey and appraisal of the dyke right-of-way for this section was completed. Representations were made for further meetings concerning an updated biological assessment of the accreted land.

C. District of Chilliwack - This project was completed some years ago except for the section of dyke from Minto Landing to Chilliwack Mountain. A substantial portion of this section is located within the Indian Reserve lands. The District was requested to expedite their decision of dyke alignment alternatives. The Mayor of Chilliwack has requested the Federal Minister of Environment Canada to extend the Program deadline due to the delays encountered in the negotiations with the native people in the area.

D. Vedder River - Construction of the setback dykes and groynes continued and the overflow structure through the B.C. Hydro embankment was completed. Approximately 20,000 cubic yards of gravel was removed from the Vedder River for dyke construction. Outstanding work includes the construction of seven drainage discharge structures through the dyke and construction of the dyke at the location of these structures. A draft report on the Vedder Management Area was completed and submitted to the Fraser River Joint Advisory Board. Total expenditure for the year on this project amounted to $632,833.

E. City of Port Coquitlam/District of Coquitlam - This project is complete except for repairs to Cedar Drive where settlement due to dyke construction was experienced. This will be rectified in July 1982. Total expenditure for this project during the year was $48,534.

F. District of Surrey - This project comprises reconstruction of 2.5 miles of dyke and 3 floodboxes in the South Westminster area. The Bridgeview section is completed except for the 124th Street floodbox. Two other contracts for this project have been deferred until towards the end of the Program. Legal survey for the Bridgeview section was completed during the year. Expenditures for the year amounted to $6,890 on this project.

G. District of Abbotsford - This project consists of the construction of a new dam, pumphouse and floodbox on the Sumas River, together with the rehabilitation of the Vedder Canal dyke and the Sumas River dyke below the dam. During the year the main activity was concentrated on the construction of the new pumphouse which was virtually completed. The pump and motors were delivered to the site and two units have been installed. Design for the dam and floodbox was completed, and tenders for the construction of the dam and floodbox will be called in April, 1982. Some work was completed on the Vedder Canal dyke but construction was halted due to funding limitations. Total expenditure for the year on this project amounted to $5,667,851.

H. District of Pitt Meadows - This project consists of the reconstruction of 14.3 miles of dyke, 2.7 miles of bank protection, the replacement of 2 floodboxes and the repair of one floodbox. All dyke construction along the Fraser, Pitt and Alouette Rivers was completed during the year. Expenditures for this project during the year totalled $662,714. One item, the reconstruction of the Kennedy Road floodbox, remains outstanding on this project pending the outcome of an Agriculture and Rural Development Subsidiary Agreement (ARDSA) application by the District to improve the internal drainage. Reconstruction of this floodbox will be integrated with the ARDSA work if approved.

I. Nicomen Island Bank Protection - The emergency bank protection commenced the previous year was completed at a cost of $127,039.

J. Emergency Work - No emergency work was authorized during the period.

8. CONSULTING ENGINEERS

Table III presents a list of consultants directly employed by the Province for the dyking program under the May 24, 1968 Agreement. The table indicates the assignments given to the consultants and the projects on which each consultant has been engaged.

9. THE MEMBERSHIP of the Board on March 31, 1982, was as follows:

Canada	British Columbia
N. H. James, Vice Chairman	B. E. Marr, Chairman
F. C. Boyd	P. M. Brady
E. M. Clark	J.D.C. Fuller

B. E. Marr, Chairman
Fraser River Joint Advisory Board

March 31, 1982

TABLE I

STATUS OF DESIGN FOR PROJECTS

Local Authority	Project No.	Project Description	Progress for Final Design*
District of Kent	1.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures and main drains at the Agassiz and Harrison Mills areas.	This project is complete.
District of Pitt Meadows	2.1	A project comprising the up grading of dykes, bank protection, drainage discharge structures, and main drains at the Maple Ridge Dyking District.	Dyke design for the Maple Ridge Dyking is complete.
	2.2	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains at Pitt Meadows Areas 1 and 2.	Design work has been postponed on this project.
Township of Richmond	3.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains of that part of Lulu Island, west of Queensborough.	Design work is essentially complete.
District of Matsqui	4.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains at Matsqui Dyking District.	This project is complete.
District of Chilliwack	5.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains. Completion of dykes in the vicinity of Chilliwack Indian Reserves 3 and 4 is still deferred pending resolution of the alignment problem.	Design is complete except for the dykes through the Indian Reserve and south of Minto Landing. The problem of obtaining dyke right-of-way through the Indian Reserves is still outstanding.
	5.2	A proposed project comprising realignment of the dyke across Chilliwack Indian Reserves 3 and 4.	Detailed dyke design is suspended.
	5.3	A proposed project to protect the District of Chilliwack and the District of Abbotsford from flooding by the Chilliwack-Vedder River.	Design work is complete.
District of Delta	6.1	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains at Delta, including the Fraser, Tsawwassen Indian Reserve and Boundary Bay dykes.	Deisgn of this project has been completed except for design work for Centennial Beach and Tsawwassen Indian Reserve areas which is suspended. The problem of obtaining dyke right-of-way through the Indian Reserve is still outstanding.
	6.2	A project comprising the upgrading of dykes, bank protection, drainage discharge structures, and main drains on Westham Island.	Design work has been postponed on this project.
District of Mission	7.1	A project comprising the reconstruction of the dykes, bank protection, drainage discharge structures, and main drains at the Mission City area.	Design work has been postponed on this project.

* See Note on final page of this table.

.....continued

TABLE I
(continued)
STATUS OF DESIGN FOR PROJECTS

Local Authority	Project No.	Project Description	Progress for Final Design*
District of Abbotsford	8.1	A project comprising the upgrading of Vedder Canal west bank dykes, the Sumas River dykes, bank protection, replacement of the Sumas Pump Station and Sumas River Dam.	Design on this project has been completed except for the Sumas River dykes which has been postponed.
Village of Harrison Hot Springs	9.1	A project comprising the upgrading of the Harrison Hot Springs dyke, pump station and the capacity of Miami Creek.	Design work has been postponed on this project.
District of Surrey	10.1	A project comprising the repair of the Serpentine and the Nicomeki River dams.	This project is complete.
	10.2	A project comprising the upgrading of the Mud Bay Dyking District sea dykes, to prevent flooding by the sea, provision of bank protection and upgrading of internal drainage works.	The requirement for dyking is still under discussion.
	10.3	A project comprising the upgrading of flood protection works to prevent damage to land from internal drainage flooding and flooding from the Serpentine and Nicomeki Rivers.	This project has been deleted from the Program as it could not be shown to be economically viable.
	10.4	A project comprising the upgrading of the Crescent Beach sea dykes, their erosion protection and internal drainage works.	Engineering studies have not yet commenced.
City of New Westminster	11.1	A project comprising the upgrading of of Lulu Island, Queensborough area dykes, bank protection and internal drainage works.	This project is complete.
District of Langley	13.1	A project comprising dyke, the Salmon River discharge structure and possibly main drain work at the Salmon River floodplain.	This project has not been initiated.
	13.2	A project comprising flood protection for other adjacent District of Langley undyked areas with the Fraser River floodplain.	A reivew of these areas has not yet been initiated.
	13.3	A project comprising the upgrading of the Glen Valley Dyking District flood protection works.	This project has not been initiated.
District of Coquitlam and	14.1	A project comprising the upgrading of Pitt River Dykes, drainage discharge structures, and main drains protecting the City and the District south of DeBoville Slough	This project is complete.
	14.2	A project comprising the upgrading of Pitt River dykes, drainage discharge structures, and main drains protecting the District north of DeBoville Slough.	Design work has been postponed on this project.
	14.3	A proposed project for the construction of works to prevent flooding from the Coquitlam River.	This project has not yet been initiated.

* See Note on page following.

.....continued

TABLE I
(continued)
STATUS OF DESIGN FOR PROJECTS

Local Authority	Project No.	Project Description	Progress for Final Design*
District of Maple Ridge	15.	A project comprising the upgrading of flood protective works of several small dykes areas in the District	A review of these proposed projects has not yet been initiated.
Province of B.C.	16.1	A project comprising the upgrading of the flood protection works of Colony Farms.	This project has not yet been initiated.
Department of Indian and Northern Affairs	17.1	A proposed project for the construction of bank protection works at Seabird Island.	Based on estimated costs - and benefits further work cannot be justified on the basis of existing Program criteria.
Dewdney Area Improvmement District	18.1	A project comprising the upgrading of the Dewdney Area Improvement District flood protection works.	Preparation of the outline report completed. An estimate of benefits has been prepared.
East and West Nicomen	19.1	A project comprising the upgrading of dykes, bank protection and internal drainage works at East and West Nicomen and I.R. 16, upstream.	Design work has been postponed on this project.
City of Kamloops	20.1	A project comprising the upgrading and construction of flood protection works at the Oak Hills area on the west bank of the North Thompson River in the City of Kamloops.	This project is complete.
	20.2	A project comprising the upgrading and construction of flood protection works in the remainder of the City on the North Thompson, South Thompson and Thompson Rivers.	An outline report has been prepared and submitted to the Municipality. An estimation of benefits has been prepared.

* NOTE: It should be noted that the Project Description includes the reconstruction of main drains and pumphouses. This aspect of the projects has been deferred for the time being except where construction has been commenced or drainage works are integral with a dyking system.

TABLE II

FRASER RIVER FLOOD CONTROL - 1968 AGREEMENT

SUMMARY OF EXPENDITURES $$$

No.	Project	Approved Funds Amount	Approved Funds Total Approved Funds	Expenditures to March 31/82	Estimated Future Expend. escal.at 10% pa	Total Estimated Expenditures
1.	District of Kent	2,003,825.00				
		200,382.50				
		483,000.00				
		50,000.00*				
		100,000.00*				
		76,000.00*				
		82,000.00*				
		50,000.00*	3,045,207.50	2,832,115.00	2,885.00	2,835,000.00
2.1	Dist. of Pitt Meadows, Maple Ridge	60,782.75*				
		23,500.00*				
		11,100,000.00	11,184,282.75	6,414,373.00	1,055,627.00	7,470,000.00
3.	Township of Richmond	12,983,500.00				
		5,536,000.00	18,519,500.00	16,548,273.00	2,101,727.00	18,650,000.00
4.	District of Matsqui	2,511,960.00				
		36,000.00*				
		15,000.00*				
		20,000.00*				
		12,853.32*	2,595,813.32 (797,000.00)•	2,547,337.00	2,663.00	2,550,000.00
5.	District of Chilliwack	5,847,435.00				
		2,425,782.40				
		70,100.00*				
		20,000.00*	8,363,317.40	6,402,817.00	2,567,183.00	8,970,000.00
5.3	District of Chilliwack Vedder River	1,055,000.00				
		25,924.50				
		5,500,000.00	6,580,924.50	5,642,116.00	1,867,884.00	7,510,000.00
6.	District of Delta	12,102,255.00				
		6,426,925.00	18,529,180.00 (568,814.00)§	13,788,856.00	1,381,144.00	15,170,000.00
8.	Dist. of Abbotsford	99,864.00*				
		460,000.00				
		450,000.00				
		22,000,000.00	23,009,864.00	11,526,814.00	12,323,186.00	23,850,000.00
9.	Harrison Hot Springs		-	45,340.00	-	45,340.00
10.	District of Surrey					
10.1	Serpentine-Nicomeki Dams	1,201,750.00	1,201,750.00	1,175,254.00	-	1,175,254.00
10.2	South Westminster	5,500,000.00	5,500,000.00	1,828,835.00	4,491,165.00	6,320,000.00
11.	City of New Westminster	2,919,486.00				
		332,434.00	3,251,920.00	3,181,299.00	-	3,181,299.00
14.1	City of Port Coquitlam & District of Coquitlam	5,560,000.00				
		17,000.00*	5,577,000.00	3,921,886.00	28,114.00	3,950,000.00
17.	Seabird Island	40,000.00*				
		85,520.00*				
		30,000.00*	155,520.00	138,844.00	-	138,844.00
18.	Dewdney Improvement Dist.	10,000.00*	10,000.00	9,116.00	-	9,116.00
19.	Nicomen Island Improvement District	100,000.00*				
		50,000.00*				
		2,500.00*				
		3,500.00*				
		15,000.00*				
		30,000.00*				
		50,000.00*				
		60,000.00*				
		3,000.00*				
		856,750.00				
		357,075.00	1,527,825.00	1,501,456.00	-	1,501,456.00
20.	City of Kamloops					
20.1	Oak Hills	1,283,400.00	1,283,400.00	1,051,444.00	-	1,051,444.00
Pre-Agreement Construction		210,092.62	210,092.62	-	-	-
Construction Cost Totals:			110,545,597.09	78,556,175.00	25,821,578.00	104,377,753.00
Upstream Storage Cost:				1,057,015.00		1,057,015.00
Design & Administration Costs:				12,372,544.00	1,592,678.00	13,965,232.00
Emergency Works:			(2,426,445.07)¶	(2,403,170.86)¶	600,000.00	600,000.00
TOTALS:			110,545,597.09	91,985,744.00	28,014,256.00	120,000,000.00

* Emergency Work.

• Cost not shared by Federal Government and not charged to Program.

§ Cost not shared by Province and not charged to Program.

¶ These Costs are included in the various projects.

TABLE III

CONSULTANT SERVICES EMPLOYED

FOR THE FRASER RIVER FLOOD CONTROL PROGRAM

Firm of Consultants	Assignment	Projects
Associated Engineering Services Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of the construction.	Districts of Pitt Meadows, Matsqui and Delta, City of New Westminster New Westminster (Queensborough area).
	Design and supervision of construction for rehabilitation of the Serpentine-Nicomeki River Dams.	District of Surrey.
	Assessment of the Sumas Dam and Pump Station.	District of Abbotsford.
	Design of the standard pump station.	General.
Murray & Associates	Legal surveys.	District of Delta.
CBA Engineering Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of the construction.	Township of Richmond.
	General engineering services for the design of dykes and internal drainage works.	District of Mission.
Golder, Brawner & Associates Ltd.	Consultant services for soils investigations with regard to dyke improvements and soil consultant services during construction.	Districts of Kent, Pitt Meadows, Matsqui, Mission, Delta, Surrey (Serpentine-Nicomeki Valley), and Coquitlam.
McElhanney Associates	Legal surveys.	District of Chilliwack.
Ripley, Klohn & Leonoff	Consultant services for soils investigations with regard to dyke improvements and soil consultant services during construction.	Township of Richmond, District of Chilliwack, Chilliwack Indian Reserves 3 and 4, Districts of Abbotsford (formerly Sumas) and Surrey (South Westminster area.)
Willis Cunliffe Tait & Company Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of construction.	Districts of Kent and Chilliwack.
	Preliminary design and cost of alternative proposal for the Hope Slough pump station.	District of Chilliwack.
Piteau Gadsby MacLeod Ltd.	General engineering services for the design of dykes and internal drainage works, and supervision of the construction.	City of Kamloops (Oak Hills dyking project).
Tunbridge & Tunbridge	Legal surveys.	District of Kent.
William Ker	Legal surveys.	District of Matsqui.
F. R. Bonn	Legal surveys.	District of Matsqui.
Cook Pickering & Doyle Ltd.	Consultant services for soils investigations with regard to dyke improvements and soil consultant services during construction.	District of Chilliwack.

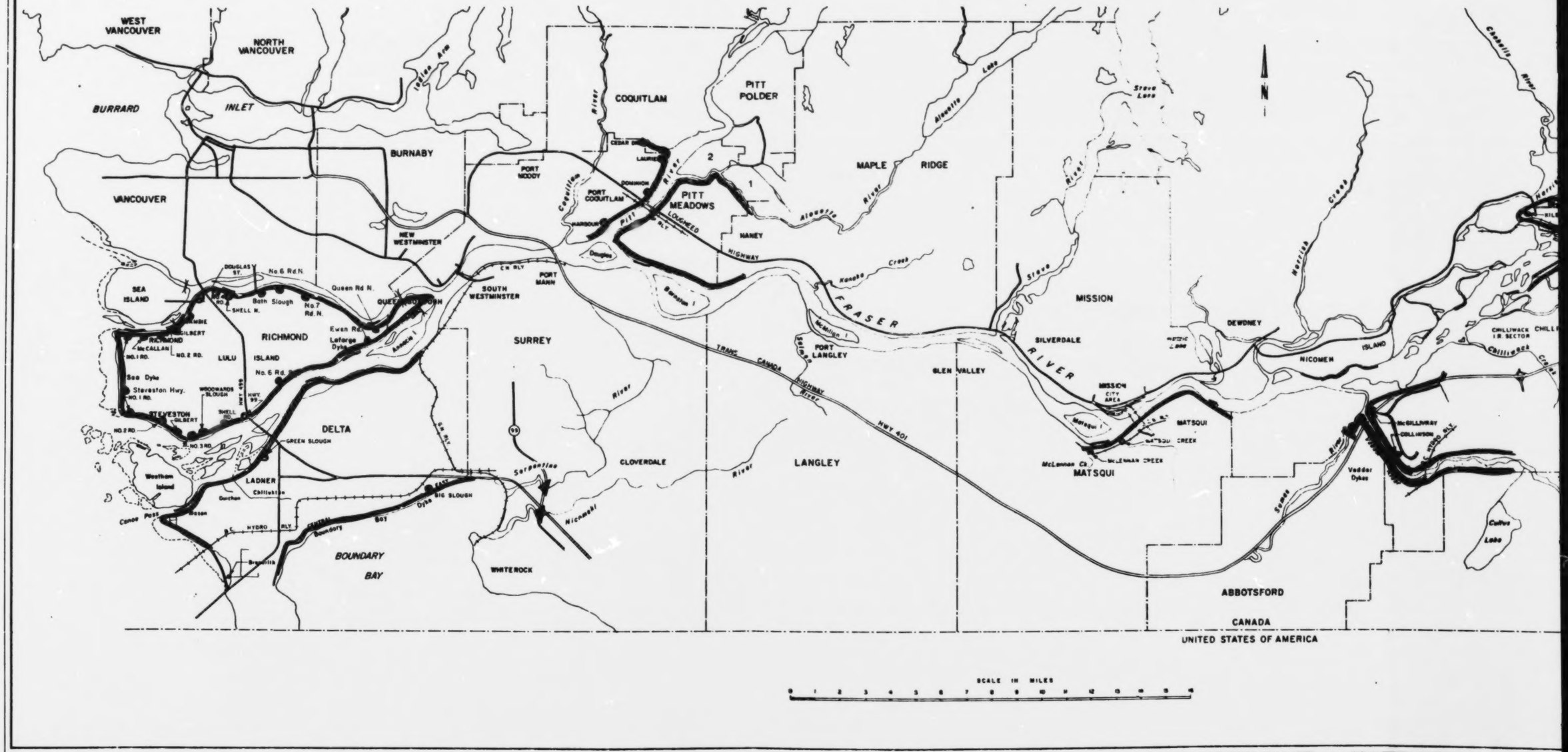
.....continued

TABLE III
(continued)
CONSULTANT SERVICES EMPLOYED

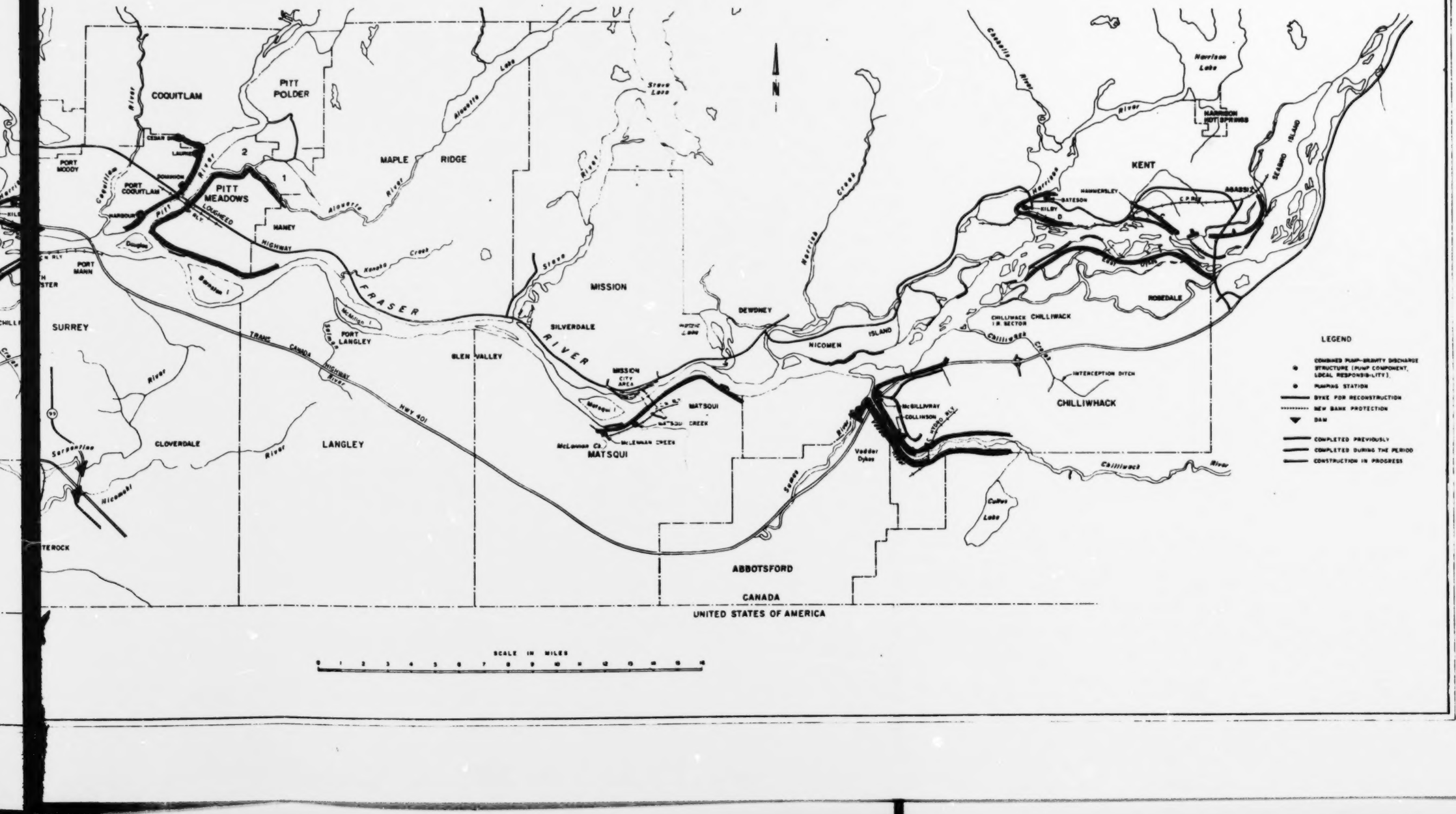
FOR THE FRASER RIVER FLOOD CONTROL PROGRAM

Firm of Consultants	Assignment	Projects
Crippen Consultants	General engineering services for the design of dykes and internal drainage works and supervision of the construction.	District of Coquitlam and City of Port Coquitlam, Districts of Surrey (South Westminster area), and Abbotsford.
Western Canada Hydraulic Laboratories Ltd.	Assessment of the fluvial geomorphology of the Vedder River.	District of Chilliwack, Vedder River Project.
Rivers Section Water Management Br. Ministry of Environment Province of B.C.	Detail design of Phase III - Setback Dykes, and supervision of the construction.	District of Chilliwack, Vedder River Project.
	Design and supervision of bank protection.	Districts of Chilliwack, Kent and Delta, Nicomen Island Dyking District, Township of Richmond, City of New Westminster (Queensborough).
Hillis Consulting Services Ltd.	Geotechnical advice for setback dykes.	District of Chilliwack, Vedder River Project.
Interwest Property Services Ltd.	Responsible for negotiations and land purchase for the Vedder River Project.	District of Chilliwack, Vedder River Project.

MAP OF LOWER FRASER VALLEY SHOWING FLOOD CONTROL WORKS UNDER CONSTRUCTION
FOR THE PERIOD APRIL 1, 1981 - MARCH 31, 1982



MAP OF LOWER FRASER VALLEY SHOWING FLOOD CONTROL WORKS UNDER CONSTRUCTION FOR THE PERIOD APRIL 1, 1981 - MARCH 31, 1982



POOR

QUALITY

ORIGINAL